

IN THE CLAIMS

Please cancel original claims 1-18 and add the following new claims 19-76.

19. An anastomosis connector comprising:
a base adapted for attachment to a graft,
a leading segment extending from said base and adapted for introduction into a host vessel;
a rear segment extending from said base; and
a hinge zone associated with said base and comprising at least one torsion member, wherein by means of said at least one torsion member said rear segment is torsionally deflectable about said hinge zone relative to said base such that said connector can be advanced into a host vessel, and wherein, upon returning to a substantially undeflected position, said rear segment prohibits retraction of said connector from the host vessel.
20. The connector of claim 19 wherein said base defines an angle between a distal end of said graft and a portion of said host vessel adjacent said connector upon forming an anastomosis, wherein said angle is less than about 90°.
21. The connector of claim 19, wherein said connector further comprises at least one lateral portion positioned between said leading segment and said rear segment on each side of said base.
22. The connector of claim 21, wherein said lateral portions are contiguous with said leading segment.
23. The connector of claim 21, wherein said connector is adapted to draw said lateral portions inward relative to said base upon deflecting said rear segment about said hinge zone.
24. The connector of claim 19, wherein said base is adapted to be compressed to a reduced size.
25. The connector of claim 19, wherein said rear segment is deflectable toward said leading segment.

26. The connector of claim 19, wherein said rear segment is deflectable away from said leading segment.
27. The connector of claim 19, wherein said connector comprises a wireform.
28. The connector of claim 27, wherein said wireform is produced by removing material from stock selected from a group consisting of tube stock and flat stock.
29. The connector of claim 19, wherein said connector further comprises at least one tab adapted to secure a graft to said connector.
30. The connector of claim 19, wherein said connector further comprises at least one tab adapted to secure a collar around a graft positioned between said connector and said collar.
31. The connector of claim 19, further comprising a collar adapted for attachment to said connector.
32. The connector of claim 31, wherein said collar comprises a split member.
33. The connector of claim 31, wherein said collar further comprises a member for interlocking with said connector.
34. The connector of claim 31, wherein said collar comprises a wireform.
35. The connector of claim 34, wherein said wireform is produced by removing material from stock selected from a group consisting of tube stock and flat stock.
36. The connector of claim 31, wherein said collar is adapted to relieve stress on a graft.
37. The connector of claim 36, wherein said adaptation to relieve stress on a graft comprises a means for graft stress relief.

38. The connector of claim 31, wherein said collar further comprises at least two lateral portions adapted to improve hemostasis of said connector when in use.
39. The connector of claim 31, wherein said collar is adapted to grasp a graft.
40. The connector of claim 39, wherein said adaptation to grasp a graft comprises a means for grasping a graft.
41. The connector of claim 19, wherein said connector comprises a biocompatible material selected from the group consisting of stainless steel, titanium and titanium alloy.
42. The connector of claim 41, wherein said titanium alloy comprises NiTi.
43. The connector of claim 31, wherein said collar comprises a biocompatible material selected from the group consisting of stainless steel, titanium and titanium alloys.
44. The connector of claim 43, wherein said titanium alloy comprises NiTi.
45. The connector of claim 19, wherein a superelastic effect returns said rear segment to its substantially undeflected position.
46. The connector of claim 19, wherein a thermoelastic or shape-memory effect returns said rear segment to its substantially undeflected position.
47. The connector of claim 19, further comprising an instrument adapted to deflect said rear segment for deployment of said connector within the host vessel.
48. The connector of claim 20, wherein said lateral portions provide a smooth transition between said leading segment and said rear segment.

49. The connector of claim 20, wherein said at least one torsion member is connected to said lateral portions.

50. The connector of claim 19, wherein said hinge zone comprises a pair of torsion members wherein each said torsion member is positioned between said rear segment and said base.

51. The connector of claim 19, wherein said hinge zone comprises two pairs of torsion members wherein each said pair is positioned between said rear segment and said base.

52. The connector of claim 19, wherein said at least one torsion member comprises a wire segment.

53. The connector of claim 19, wherein said at least one torsion member comprises a narrowed section of said base.

54. The connector of claim 38, wherein said collar lateral portions interface with said connector lateral portions when said collar is operatively attached to said connector.

55. The connector of claim 19, wherein said connector comprises a plurality of interconnected links having spaces therebetween and adapted to engage the inner surface of the host vessel.

56. The connector of claim 55 wherein at least said leading and rear segments are formed from said interconnected links.

57. The connector of claim 20 wherein said at least one lateral portion is formed from said interconnected links.

58. An anastomosis connector comprising:
a leading segment adapted for introduction into a host vessel;
a rear segment interconnected to said leading segment; and
at least one torsion member associated with said rear segment wherein said rear segment is torsionally deflectable relative to said leading segment such that said connector can be advanced into said

host vessel, and wherein, upon returning to a substantially undeflected position, said rear segment prohibits retraction of said connector from the host vessel.

59. The connector of claim 58 wherein said connector defines an angle between a distal end of said graft and a portion of said host vessel adjacent said connector upon forming an anastomosis, wherein said angle is less than about 90°.

60. The connector of claim 58, wherein said connector further comprises at least one lateral portion positioned between said leading segment and said rear segment on each side of said connector.

61. The connector of claim 60, wherein said lateral portions are contiguous with said leading segment.

62. The connector of claim 60, wherein said connector is adapted to draw said lateral portions inward upon deflecting said rear segment.

63. The connector of claim 58, wherein said connector is adapted to be compressed to a reduced size.

64. The connector of claim 58, wherein said rear segment is deflectable toward said leading segment.

65. The connector of claim 58, wherein said rear segment is deflectable away from said leading segment.

66. The connector of claim 58, wherein said at least one torsion member comprises a first torsion member located on a first side of said rear segment and a second torsion member located on a second side of said rear segment.

67. The connector of claim 58, wherein said at least one torsion member comprises a first pair of torsion members located on a first side of said rear segment and a second pair of torsion members located on a second side of said rear segment.

68. A kit for forming an anastomosis between a graft vessel and a host vessel, the kit comprising:

- (a) at least one anastomosis connector comprising:
 - (i) a leading segment adapted for introduction into a host vessel;
 - (ii) a rear segment interconnected to said leading segment; and
 - (iii) at least one torsion member associated with said rear segment wherein said rear segment is torsionally deflectable relative to said leading segment such that said connector can be advanced into said host vessel, and wherein, upon returning to a substantially undeflected position, said rear segment prohibits retraction of said connector from the host vessel; and
- (b) a tool for attaching said connector to the graft vessel; and
- (c) a tool for deploying said at an arteriotomy site within the host vessel.

69. The kit of claim 68 wherein said tool for deploying comprises means for deflecting said rear segment.

70. An anastomosis connector system comprising:
an inner member adapted for positioning inside a graft vessel and inside a host vessel, said inner member comprising:
a leading segment adapted for introduction into a host vessel;
a rear segment interconnected to said leading segment; and
at least one torsion member associated with said rear segment wherein said rear segment is torsionally deflectable relative to said leading segment such that said inner member can be advanced into said host vessel, and wherein, upon returning to a substantially undeflected position, said rear segment prohibits retraction of said inner member from the host vessel; and
an outer member adapted for positioning outside a graft vessel and outside a host vessel wherein the inner and outer members are configured to form an anastomotic connection between said graft vessel and said host vessel.

71. The system of claim 70 further comprising a locking interface for securing said inner frame to said outer frame.

72. The system of claim 71 wherein said locking interface comprises one or more tabs on said inner member or said outer member or both said inner member and said outer member.

73. The system of claim 70 wherein said outer member comprises a proximal band and a distal band.

74. The system of claim 70 wherein said inner member comprises at least one lateral portion and said outer member comprises at least one lateral portion wherein said at least one inner member lateral portion interfaces with said at least one outer member lateral portion.

75. A kit for forming an anastomosis between a graft vessel and a host vessel, the kit comprising:

(a) at least one anastomosis connector system comprising:

(i) an inner member adapted for positioning inside a graft vessel and inside a host vessel, said inner member comprising:

a leading segment adapted for introduction into a host vessel;

a rear segment interconnected to said leading segment; and

at least one torsion member associated with said rear segment wherein said rear segment is torsionally deflectable relative to said leading segment such that said inner member can be advanced into said host vessel, and wherein, upon returning to a substantially undeflected position, said rear segment prohibits retraction of said inner member from the host vessel; and

(ii) an outer member adapted for positioning outside a graft vessel and outside a host vessel wherein the inner and outer members are configured to form an anastomotic connection between said graft vessel and said host vessel.

(b) a tool for attaching said inner member or said outer member to the graft vessel; and

(c) a tool for deploying said inner member and said outer member at an arteriotomy site within the host vessel.

76. The kit of claim 75 wherein said tool for deploying comprises means for deflecting said rear segment of said inner member.